

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 1 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title page, Item [56]

Page 4 of "References", Column 2, line 37: After line 37, insert
the reference -- "Construction and Characterization of a Potential Live
Oral Carrier-Based Vaccine Against *Vibrio Cholerae*." Favre et al.
Infection and Immunity. September 1996. Vol. 64, No. 9 pages
3565-3570, entire document. --.

In the Specification:

Column 2, line 25: Before the word "polysaccharide's" delete "*".
Column 4, line 14: Delete "syntheses" and replace with -- synthases --.
Column 6, line 40: Delete "PmHS2" and replace with -- pmHS2 --.
Column 6, line 45: Delete "PmHS2" and replace with -- pmHS2 --.
Column 7, line 1: Delete "a short chondroitin polymer,".
Column 7, line 14: Delete "pnHS, and PmHS2" and replace with
-- pmHS1, and pmHS2 --.
Column 7, line 18: Delete "PmHS2" and replace with -- pmHS2 --.
Column 7, line 63: After the word "growth" delete ":" and replace with -- ; --.
Column 8, line 15: Delete "PmHS2" and replace with -- pmHS2 --.
Column 8, line 20: Delete "PmHS2" and replace with -- pmHS2 --.
Column 8, line 26: Delete "PmHS2" and replace with -- pmHS2 --.
Column 8, line 34: Delete "PmHS2" and replace with -- pmHS2 --.
Column 9, line 27: Delete "PmHS2" and replace with -- pmHS2 --.
Column 9, line 31: Delete "therpaeutic" and replace with -- therapeutic --.
Column 12, line 53: Delete "PmHS2" and replace with -- pmHS2 --.
Column 13, line 4: Delete "Gal-NAc" and replace with -- GalNAc --.
Column 13, line 55: Delete "μof" and replace with -- μg of --.
Column 15, line 1: Delete "eithera" and replace with -- either a --.
Column 19, line 4: Delete "PmHS2" and replace with -- pmHS2 --.
Column 19, line 23: Delete "PmHS2" and replace with -- pmHS2 --.
Column 19, line 27: Delete "PmHS2" and replace with -- pmHS2 --.
Column 19, line 41: Delete "PmHS2" and replace with -- pmHS2 --.
Column 20, line 7: Delete "PmHS2" and replace with -- pmHS2 --.
Column 20, line 17: Delete "PmHS2" and replace with -- pmHS2 --.
Column 20, line 44: Delete "PmHS2" and replace with -- pmHS2 --.
Column 20, line 63: Delete "PmHS2" and replace with -- pmHS2 --.
Column 21, line 39: Delete "AX@" and replace with -- "X" --.
Column 22, line 23: Delete "PmHS2" and replace with -- pmHS2 --.
Column 22, line 26: Delete "PmHS2" and replace with -- pmHS2 --.
Column 25, line 66: Delete "solution 1% SDS" and replace with
-- solution/1.0% SDS, followed with --.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 26, line 26: Delete "5'-CGCTAT-3'" and replace with -- 5'-CGCTAT-3' --.
Column 26, line 28: Delete "base-pair" and replace with -- base pair --.
Column 27, line 39: Delete "PmHS2" and replace with -- pmHS2 --.
Column 28, line 36: Delete "PmCS" and replace with -- pmCS --.
Column 28, line 40: Delete "PmCS" and replace with -- pmCS --.
Column 30, line 54: Delete "GlcUa" and replace with -- GlcUA --.
Column 30, line 64: Delete "PmCS" and replace with -- pmCS --.
Column 30, line 65: Delete "PmHS2" and replace with -- pmHS2 --.
Column 31, line 67: Delete "4.4." and replace with -- 4.4 --.
Column 34, line 10: Delete "(5 lane)" and replace with -- (S lane) --.
Column 34, line 47: Delete "pmHAS¹⁻⁷⁰³" and replace with -- pmHAS¹⁻⁷⁰³ --.
Column 36, lines 33-34: Delete "pmHAS¹⁻⁷⁰³" and replace with -- pmHAS¹⁻⁷⁰³ --.
Column 37, lines 65-66: Delete "ethleneg-lycol" and replace with -- ethlene glycol --.
Column 38, line 22: Delete "PmHS2" and replace with -- pmHS2 --.
Column 38, lines 40-41: After "(Dig Easy Hyb)" delete "at 37 C. overnight".
Column 38, line 51: After "In order" delete " ,".
Column 40, line 8: Delete "were mutated".
Column 40, line 15: Delete "pmHAS¹⁻⁷⁰³" and replace with -- pmHAS¹⁻⁷⁰³ --.
Column 42, line 31: Delete "ANXN@" and replace with -- "NXN" --.
Column 42, lines 34-36: Delete "UDP-GalNAc in analogy to pmHAS transferring [³H]GalNAc to HA oligosaccharides using UDP-GlcNAc" and replace with -- UDP-[³H]GalNAc in analogy to pmHAS transferring [³H]GlcNAc to HA oligosaccharides using UDP-[³H]GlcNAc --.
Column 43, line 21: After "coli" insert a -- . --.
Column 46, line 32: Delete "pCS" and replace with -- pmCS --.
Column 46, line 49: Delete ""swapping@" and replace with -- "swapping" --.
Column 49, line 5: Delete "PmHS2" and replace with -- pmHS2 --.
Column 49, line 13: Delete "PmHS2" and replace with -- pmHS2 --.
Column 49, line 19: Delete "PmHS2" and replace with -- pmHS2 --.
Column 49, line 35: Delete "PmHS2" and replace with -- pmHS2 --.
Column 49, line 55: After "GenBank" delete "15".
Column 49, line 56: Delete "pmHS" and replace with -- pmHS1 --.
Column 50, line 2: After "Tuner" insert a -- , --.
Column 50, line 28: Delete "PmHS2" and replace with -- pmHS2 --.
Column 50, line 31: Delete "PmHS2" and replace with -- pmHS2 --.
Column 50, line 33: Delete "PmHS2" and replace with -- pmHS2 --.
Column 50, line 37: Delete "PmHS2" and replace with -- pmHS2 --.
Column 51, line 37: Delete "PmHS2" and replace with -- pmHS2 --.
Column 51, line 42: Delete "PmHS2" and replace with -- pmHS2 --.
Column 51, line 58: Delete "PmHS2" and replace with -- pmHS2 --.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 51, line 61: Delete "PmHS2" and replace with -- pmHS2 --.
Column 52, line 1: Delete "PmHS2" and replace with -- pmHS2 --.
Column 52, line 55: Delete "PmHS2" and replace with -- pmHS2 --.
Column 54, line 3: Delete "PmHS2" and replace with -- pmHS2 --.
Column 54, line 66: Delete "PmHS2" and replace with -- pmHS2 --.
Column 54, line 67: Delete "r Hybrid r" and replace with -- or Hybrid or --.
Column 55, line 14: Delete "PmHS2" and replace with -- pmHS2 --.
Column 55, line 18: Delete "PmHS2" and replace with -- pmHS2 --.
Column 55, line 29: Delete "PmHS2" and replace with -- pmHS2 --.
Column 55, line 39: Delete "Haase" and replace with -- HAase --.
Column 55, line 40: Delete "Hep2 or Hep2" and replace with -- Hep2 or Hep3 --.
Column 55, line 43: Delete "*E. Coli*" and replace with -- *E. coli* --.
Column 57, line 21: Delete "D Main" and replace with -- Domain --.
Column 57, line 30: After words "library clone" delete "contain" and replace with -- containing --.
Column 57, line 54: Delete "pMCS" and replace with -- pmCS --.
Column 57, line 55: Delete "Table XXII" and replace with -- (Table XXII) --.
Column 60, line 10: Delete "3H, 125I" and replace with -- ³H, ¹²⁵I --.
Column 62, line 65: After the word "In" and before "FIG." delete "the".
Column 63, line 53: Delete "(BBDS)" and replace with -- (BDDS) --.
Column 67, lines 5-6: Delete "Atailored@" and replace with -- "tailored" --.
Column 67, line 15: Delete "PmHS2" and replace with -- pmHS2 --.
Column 67, line 18: Delete "PmHS2" and replace with -- pmHS2 --.
Column 68, line 16: Delete "PmHS2" and replace with -- pmHS2 --.
Column 70, lines 41-42: Delete "orchimeric" and replace with -- or chimeric --.
Column 70, line 60: Delete "*xenopus*" and replace with -- *Xenopus* --.
Column 72, line 47: Delete ""Zap Express"" and replace with -- ZAPEXPRESS® --.
Column 72, line 60: Delete "the-insert" and replace with -- the insert --.
Column 75, line 60: Delete "pmHAS1-703 or pmCS1-704" and replace with -- pmHAS¹⁻⁷⁰³ or pmCS¹⁻⁷⁰⁴ --.
Column 76, line 22: Delete "30 cm;" and replace with -- x 30 cm; --.
Column 76, line 29: Delete "dn/dC" and replace with -- dn/dc --.

In the Claims:

Column 221, line 38: Delete "combinationS" and replace with -- combinations --.
Column 221, line 53: Delete "glycosamirioglycan" and replace with -- glycosaminoglycan --.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Sequence listing:

Column 81, at the bottom of the page: Delete "<160> NUMBER OF SEQ ID NOS: 71"
and replace with -- <160> NUMBER OF SEQ ID NOS: 85 --.

Columns 219 - 220: After the Sequence listing and before the claims, insert the
following sequence listing for SEQ ID NOS: 72 - 85:

--

<210> 72
<211> 107
<212> PRT
<213> Pasteurella multocida

<400> 72

Ser Ile Ile Val Thr Thr Phe Asn Arg Pro Ala Ile Leu Ser Ile Thr
1 5 10 15

Leu Ala Cys Leu Val Asn Gln Lys Thr His Tyr Pro Phe Glu Val Ile
20 25 30

Val Thr Asp Asp Gly Ser Gln Glu Asp Leu Ser Pro Ile Ile Arg Gln
35 40 45

Tyr Glu Asn Lys Leu Asp Ile Arg Tyr Val Arg Gln Lys Asp Asn Gly
50 55 60

Phe Gln Ala Ser Ala Ala Arg Asn Met Gly Leu Arg Leu Ala Lys Tyr
65 70 75 80

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Asp Phe Ile Gly Leu Leu Asp Cys Asp Met Ala Pro Asn Pro Leu Trp
85 90 95

Val His Ser Tyr Val Ala Glu Leu Leu Glu Asp
100 105

<210> 73
<211> 105
<212> PRT
<213> Pasteurella multocida

<400> 73

Ser Ile Tyr Ile Pro Ala Tyr Asn Cys Ala Asn Tyr Ile Gln Arg Cys
1 5 10 15

Val Asp Ser Ala Leu Asn Gln Thr Thr Val Asp Leu Glu Val Cys Ile
20 25 30

Cys Asn Asp Gly Ser Thr Asp Asn Thr Leu Glu Val Ile Asn Lys Leu
35 40 45

Tyr Gly Asn Asn Pro Arg Val Arg Ile Met Ser Lys Pro Asn Gly Gly
50 55 60

Ile Ala Ser Ala Ser Asn Ala Ala Val Ser Phe Ala Lys Gly Tyr Tyr
65 70 75 80

Ile Gly Gln Leu Asp Ser Asp Asp Tyr Leu Glu Pro Asp Ala Val Glu
85 90 95

Leu Cys Leu Lys Glu Phe Leu Lys Asp
100 105

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<210> 74
<211> 771
<212> PRT
<213> *Pasteurella multocida*

<400> 74

Met Asn Thr Leu Ser Gln Ala Ile Lys Ala Tyr Asn Ser Asn Asp Tyr
1 5 10 15

Gln Leu Ala Leu Lys Leu Phe Glu Lys Ser Ala Glu Ile Tyr Gly Arg
20 25 30

Lys Ile Val Glu Phe Gln Ile Thr Lys Cys Lys Glu Lys Leu Ser Ala
35 40 45

His Pro Ser Val Asn Ser Ala His Leu Ser Val Asn Lys Glu Glu Lys
50 55 60

Val Asn Val Cys Asp Ser Pro Leu Asp Ile Ala Thr Gln Leu Leu Leu
65 70 75 80

Ser Asn Val Lys Lys Leu Val Leu Ser Asp Ser Glu Lys Asn Thr Leu
85 90 95

Lys Asn Lys Trp Lys Leu Leu Thr Glu Lys Lys Ser Glu Asn Ala Glu
100 105 110

Val Arg Ala Val Ala Leu Val Pro Lys Asp Phe Pro Lys Asp Leu Val
115 120 125

Leu Ala Pro Leu Pro Asp His Val Asn Asp Phe Thr Trp Tyr Lys Lys
130 135 140

Arg Lys Lys Arg Leu Gly Ile Lys Pro Glu His Gln His Val Gly Leu
145 150 155 160

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Ser Ile Ile Val Thr Thr Phe Asn Arg Pro Ala Ile Leu Ser Ile Thr
165 170 175

Leu Ala Cys Leu Val Asn Gln Lys Thr His Tyr Pro Phe Glu Val Ile
180 185 190

Val Thr Asp Asp Gly Ser Gln Glu Asp Leu Ser Pro Ile Ile Arg Gln
195 200 205

Tyr Glu Asn Lys Leu Asp Ile Arg Tyr Val Arg Gln Lys Asp Asn Gly
210 215 220

Phe Gln Ala Ser Ala Ala Arg Asn Met Gly Leu Arg Leu Ala Lys Tyr
225 230 235 240

Asp Phe Ile Gly Leu Leu Asp Cys Asp Met Ala Pro Asn Pro Leu Trp
245 250 255

Val His Ser Tyr Val Ala Glu Leu Leu Val Gln Lys Tyr Glu Gln Lys
260 265 270

Leu Asp Ile Lys Tyr Val Arg Gln Lys Asp Tyr Gly Tyr Gln Leu Cys
275 280 285

Ala Val Arg Asn Leu Gly Leu Arg Thr Ala Lys Tyr Asp Phe Val Ser
290 295 300

Ile Leu Asp Cys Asp Met Ala Pro Gln Gln Leu Trp Val His Ser Tyr
305 310 315 320

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Leu Thr Glu Leu Leu Glu Asp Asn Asp Ile Val Leu Ile Gly Pro Arg
325 330 335

Lys Tyr Val Asp Thr His Asn Ile Thr Ala Glu Gln Phe Leu Asn Asp
340 345 350

Pro Tyr Leu Ile Glu Ser Leu Pro Glu Thr Ala Thr Asn Asn Asn Pro
355 360 365

Ser Ile Thr Ser Lys Gly Asn Ile Ser Leu Asp Trp Arg Leu Glu His
370 375 380

Phe Lys Lys Thr Asp Asn Leu Arg Leu Cys Asp Ser Pro Phe Arg Tyr
385 390 395 400

Phe Ser Cys Gly Asn Val Ala Phe Ser Lys Glu Trp Leu Asn Lys Val
405 410 415

Gly Trp Phe Asp Glu Glu Phe Asn His Trp Gly Gly Glu Asp Val Glu
420 425 430

Phe Gly Tyr Arg Leu Phe Ala Lys Gly Cys Phe Phe Arg Val Ile Asp
435 440 445

Gly Gly Met Ala Tyr His Gln Glu Pro Pro Gly Lys Glu Asn Glu Thr
450 455 460

Asp Arg Glu Ala Gly Lys Ser Ile Thr Leu Lys Ile Val Lys Glu Lys
465 470 475 480

Val Pro Tyr Ile Tyr Arg Lys Leu Leu Pro Ile Glu Asp Ser His Ile
485 490 495

His Arg Ile Pro Leu Val Ser Ile Tyr Ile Pro Ala Tyr Asn Cys Ala
500 505 510

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Asn Tyr Ile Gln Arg Cys Val Asp Ser Ala Leu Asn Gln Thr Val Val
515 520 525

Asp Leu Glu Val Cys Ile Cys Asn Asp Gly Ser Thr Asp Asn Thr Leu
530 535 540

Glu Val Ile Asn Lys Leu Tyr Gly Asn Asn Pro Arg Val Arg Ile Met
545 550 555 560

Ser Lys Pro Asn Gly Gly Ile Ala Ser Ala Ser Asn Ala Ala Val Ser
565 570 575

Phe Ala Lys Gly Tyr Tyr Ile Gly Gln Leu Asp Ser Asp Asp Tyr Leu
580 585 590

Glu Pro Asp Ala Val Glu Leu Cys Leu Lys Glu Phe Leu Lys Asp Lys
595 600 605

Thr Leu Ala Cys Val Tyr Thr Thr Asn Arg Asn Val Asn Pro Asp Gly
610 615 620

Ser Leu Ile Ala Asn Gly Tyr Asn Trp Pro Glu Phe Ser Arg Glu Lys
625 630 635 640

Leu Thr Thr Ala Met Ile Ala His His Phe Arg Met Phe Thr Ile Arg
645 650 655

Ala Trp His Leu Thr Asp Gly Phe Asn Glu Asn Ile Glu Asn Ala Val
660 665 670

Asp Tyr Asp Met Phe Leu Lys Leu Ser Glu Val Gly Lys Phe Lys His
675 680 685

Leu Asn Lys Ile Cys Tyr Asn Arg Val Leu His Gly Asp Asn Thr Ser
690 695 700

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Ile Lys Lys Leu Gly Ile Gln Lys Lys Asn His Phe Val Val Val Asn
705 710 715 720

Gln Ser Leu Asn Arg Gln Gly Ile Asn Tyr Tyr Asn Tyr Asp Lys Phe
725 730 735

Asp Asp Leu Asp Glu Ser Arg Lys Tyr Ile Phe Asn Lys Thr Ala Glu
740 745 750

Tyr Gln Glu Glu Met Asp Ile Leu Lys Asp Leu Lys Leu Ile Gln Asn
755 760 765

Lys Asp Ala
770

<210> 75
<211> 696
<212> PRT
<213> Pasteurella multocida

<400> 75

Met Asn Thr Leu Ser Gln Ala Ile Lys Ala Tyr Asn Ser Asn Asp Tyr
1 5 10 15

Glu Leu Ala Leu Lys Leu Phe Glu Lys Ser Ala Glu Thr Tyr Gly Arg
20 25 30

Lys Ile Val Glu Phe Gln Ile Ile Lys Cys Lys Glu Lys Leu Ser Thr
35 40 45

Asn Ser Tyr Val Ser Glu Asp Lys Lys Asn Ser Val Cys Asp Ser Ser
50 55 60

Leu Asp Ile Ala Thr Gln Leu Leu Leu Ser Asn Val Lys Lys Leu Thr
65 70 75 80

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Leu Ser Glu Ser Glu Lys Asn Ser Leu Lys Asn Lys Trp Lys Ser Ile
85 90 95

Thr Gly Lys Lys Ser Glu Asn Ala Glu Ile Arg Lys Val Glu Leu Val
100 105 110

Pro Lys Asp Phe Pro Lys Asp Leu Val Leu Ala Pro Leu Pro Asp His
115 120 125

Val Asn Asp Phe Thr Trp Tyr Lys Asn Arg Lys Lys Ser Leu Gly Ile
130 135 140

Lys Pro Val Asn Lys Asn Ile Gly Leu Ser Ile Ile Ile Pro Thr Phe
145 150 155 160

Asn Arg Ser Arg Ile Leu Asp Ile Thr Leu Ala Cys Leu Val Asn Gln
165 170 175

Lys Thr Asn Tyr Pro Phe Glu Val Val Val Ala Asp Asp Gly Ser Lys
180 185 190

Glu Asn Leu Leu Thr Ile Ile Arg Gln Tyr Glu Asn Lys Leu Asp Ile
195 200 205

Arg Tyr Val Arg Gln Lys Asp Asn Gly Phe Gln Ala Ser Ala Ala Arg
210 215 220

Asn Met Gly Leu Arg Leu Ala Lys Tyr Asp Phe Ile Gly Leu Leu Asp
225 230 235 240

Cys Asp Met Ala Pro Asn Pro Leu Trp Val His Ser Tyr Val Ala Glu
245 250 255

Leu Leu Glu Asp Asp Asp Leu Thr Ile Ile Gly Pro Arg Lys Tyr Ile
260 265 270

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Asp Thr Gln His Ile Asp Pro Lys Asp Phe Leu Asn Asn Ala Ser Leu
275 280 285

Leu Glu Ser Leu Pro Glu Val Lys Thr Asn Asn Ser Val Ala Ala Lys
290 295 300

Gly Glu Gly Thr Val Ser Leu Asp Trp Arg Leu Glu Gln Phe Glu Lys
305 310 315 320

Thr Glu Asn Leu Arg Leu Ser Asp Ser Pro Phe Arg Phe Phe Ala Ala
325 330 335

Gly Asn Val Ala Phe Ala Lys Lys Trp Leu Asn Lys Ser Gly Phe Phe
340 345 350

Asp Glu Glu Phe Asn His Trp Gly Gly Glu Asp Val Glu Phe Gly Tyr
355 360 365

Arg Leu Phe Arg Tyr Gly Ser Phe Phe Lys Thr Ile Asp Gly Ile Met
370 375 380

Ala Tyr His Gln Glu Pro Pro Gly Lys Glu Asn Glu Thr Asp Arg Glu
385 390 395 400

Ala Gly Lys Asn Ile Thr Leu Asp Ile Met Arg Glu Lys Val Pro Tyr
405 410 415

Ile Tyr Arg Lys Leu Leu Pro Ile Glu Asp Ser His Ile Asn Arg Val
420 425 430

Pro Leu Val Ser Ile Tyr Ile Pro Ala Tyr Asn Cys Ala Asn Tyr Ile
435 440 445

Gln Arg Cys Val Asp Ser Ala Leu Asn Gln Thr Val Val Asp Leu Glu
450 455 460

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Val Cys Ile Cys Asn Asp Gly Ser Thr Asp Asn Thr Leu Glu Val Ile
465 470 475 480

Asn Lys Leu Tyr Gly Asn Asn Pro Arg Val Arg Ile Met Ser Lys Pro
485 490 495

Asn Gly Gly Ile Ala Ser Ala Ser Asn Ala Ala Val Ser Phe Ala Lys
500 505 510

Gly Tyr Tyr Ile Gly Gln Leu Asp Ser Asp Asp Tyr Leu Glu Pro Asp
515 520 525

Ala Val Glu Leu Cys Leu Lys Glu Phe Leu Lys Asp Lys Thr Leu Ala
530 535 540

Cys Val Tyr Thr Thr Asn Arg Asn Val Asn Pro Asp Gly Ser Leu Ile
545 550 555 560

Ala Asn Gly Tyr Asn Trp Pro Glu Phe Ser Arg Glu Lys Leu Thr Thr
565 570 575

Ala Met Ile Ala His His Phe Arg Met Phe Thr Ile Arg Ala Trp His
580 585 590

Leu Thr Asp Gly Phe Asn Glu Lys Ile Glu Asn Ala Val Asp Tyr Asp
595 600 605

Met Phe Leu Lys Leu Ser Glu Val Gly Lys Phe Lys His Leu Asn Lys
610 615 620

Ile Cys Tyr Asn Arg Val Leu His Gly Asp Asn Thr Ser Ile Lys Lys
625 630 635 640

Leu Gly Ile Gln Lys Lys Asn His Phe Val Val Val Asn Gln Ser Leu
645 650 655

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Asn Arg Gln Gly Ile Thr Tyr Tyr Asn Tyr Asp Glu Phe Asp Asp Leu
660 665 670

Asp Glu Ser Arg Lys Tyr Ile Phe Asn Lys Thr Ala Glu Tyr Gln Glu
675 680 685

Glu Ile Asp Ile Leu Lys Asp Ile
690 695

<210> 76
<211> 711
<212> PRT
<213> Pasteurella multocida

<400> 76

Met Asn Thr Leu Ser Gln Ala Ile Lys Ala Tyr Asn Ser Asn Asp Tyr
1 5 10 15

Gln Leu Ala Leu Lys Leu Phe Glu Lys Ser Ala Glu Ile Tyr Gly Arg
20 25 30

Lys Ile Val Glu Phe Gln Ile Thr Lys Cys Lys Glu Lys Leu Ser Ala
35 40 45

His Pro Ser Val Asn Ser Ala His Leu Ser Val Asn Lys Glu Glu Lys
50 55 60

Val Asn Val Cys Asp Ser Pro Leu Asp Ile Ala Thr Gln Leu Leu Leu
65 70 75 80

Ser Asn Val Lys Lys Leu Val Leu Ser Asp Ser Glu Lys Asn Thr Leu
85 90 95

Lys Asn Lys Trp Lys Leu Leu Thr Glu Lys Lys Ser Glu Asn Ala Glu
100 105 110

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Val Arg Ala Val Ala Leu Val Pro Lys Asp Phe Pro Lys Asp Leu Val
115 120 125

Leu Ala Pro Leu Pro Asp His Val Asn Asp Phe Thr Trp Tyr Lys Lys
130 135 140

Arg Lys Lys Arg Leu Gly Ile Lys Pro Glu His Gln His Val Gly Leu
145 150 155 160

Ser Ile Ile Val Thr Thr Phe Asn Arg Pro Ala Ile Leu Ser Ile Thr
165 170 175

Leu Ala Cys Leu Val Asn Gln Lys Thr His Tyr Pro Phe Glu Val Ile
180 185 190

Val Thr Asp Asp Gly Ser Gln Glu Asp Leu Ser Pro Ile Ile Arg Gln
195 200 205

Tyr Glu Asn Lys Leu Asp Ile Arg Tyr Val Arg Gln Lys Asp Tyr Gly
210 215 220

Tyr Gln Leu Cys Ala Val Arg Asn Leu Gly Leu Arg Thr Ala Lys Tyr
225 230 235 240

Asp Phe Val Ser Ile Leu Asp Cys Asp Met Ala Pro Gln Gln Leu Trp
245 250 255

Val His Ser Tyr Leu Thr Glu Leu Leu Glu Asp Asn Asp Ile Val Leu
260 265 270

Ile Gly Pro Arg Lys Tyr Val Asp Thr His Asn Ile Thr Ala Glu Gln
275 280 285

Phe Leu Asn Asp Pro Tyr Leu Ile Glu Ser Leu Pro Glu Thr Ala Thr
290 295 300

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Asn Asn Asn Pro Ser Ile Thr Ser Lys Gly Asn Ile Ser Leu Asp Trp
305 310 315 320

Arg Leu Glu His Phe Lys Lys Thr Asp Asn Leu Arg Leu Cys Asp Ser
325 330 335

Pro Phe Arg Tyr Phe Ser Cys Gly Asn Val Ala Phe Ser Lys Glu Trp
340 345 350

Leu Asn Lys Val Gly Trp Phe Asp Glu Glu Phe Asn His Trp Gly Gly
355 360 365

Glu Asp Val Glu Phe Gly Tyr Arg Leu Phe Ala Lys Gly Cys Phe Phe
370 375 380

Arg Val Ile Asp Gly Gly Met Ala Tyr His Gln Glu Pro Pro Gly Lys
385 390 395 400

Glu Asn Glu Thr Asp Arg Glu Ala Gly Lys Ser Ile Thr Leu Lys Ile
405 410 415

Val Lys Glu Lys Val Pro Tyr Ile Tyr Arg Lys Leu Leu Pro Ile Glu
420 425 430

Asp Ser His Ile His Arg Ile Pro Leu Val Ser Ile Tyr Ile Pro Ala
435 440 445

Tyr Asn Cys Ala Asn Tyr Ile Gln Arg Cys Val Asp Ser Ala Leu Asn
450 455 460

Gln Thr Val Val Asp Leu Glu Val Cys Ile Cys Asn Asp Gly Ser Thr
465 470 475 480

Asp Asn Thr Leu Glu Val Ile Asn Lys Leu Tyr Gly Asn Asn Pro Arg
485 490 495

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 17 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Val Arg Ile Met Ser Lys Pro Asn Gly Gly Ile Ala Ser Ala Ser Asn
500 505 510

Ala Ala Val Ser Phe Ala Lys Gly Tyr Tyr Ile Gly Gln Leu Asp Ser
515 520 525

Asp Asp Tyr Leu Glu Pro Asp Ala Val Glu Leu Cys Leu Lys Glu Phe
530 535 540

Leu Lys Asp Lys Thr Leu Ala Cys Val Tyr Thr Thr Asn Arg Asn Val
545 550 555 560

Asn Pro Asp Gly Ser Leu Ile Ala Asn Gly Tyr Asn Trp Pro Glu Phe
565 570 575

Ser Arg Glu Lys Leu Thr Thr Ala Met Ile Ala His His Phe Arg Met
580 585 590

Phe Thr Ile Arg Ala Trp His Leu Thr Asp Gly Phe Asn Glu Asn Ile
595 600 605

Glu Asn Ala Val Asp Tyr Asp Met Phe Leu Lys Leu Ser Glu Val Gly
610 615 620

Lys Phe Lys His Leu Asn Lys Ile Cys Tyr Asn Arg Val Leu His Gly
625 630 635 640

Asp Asn Thr Ser Ile Lys Lys Leu Gly Ile Gln Lys Lys Asn His Phe
645 650 655

Val Val Val Asn Gln Ser Leu Asn Arg Gln Gly Ile Asn Tyr Tyr Asn
660 665 670

Tyr Asp Lys Phe Asp Asp Leu Asp Glu Ser Arg Lys Tyr Ile Phe Asn
675 680 685

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 18 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Lys Thr Ala Glu Tyr Gln Glu Glu Met Asp Ile Leu Lys Asp Leu Lys
690 695 700

Leu Ile Gln Asn Lys Asp Ala
705 710

<210> 77
<211> 696
<212> PRT
<213> Pasteurella multocida

<400> 77

Met Asn Thr Leu Ser Gln Ala Ile Lys Ala Tyr Asn Ser Asn Asp Tyr
1 5 10 15

Glu Leu Ala Leu Lys Leu Phe Glu Lys Ser Ala Glu Thr Tyr Gly Arg
20 25 30

Lys Ile Val Glu Phe Gln Ile Ile Lys Cys Lys Glu Lys Leu Ser Thr
35 40 45

Asn Ser Tyr Val Ser Glu Asp Lys Lys Asn Ser Val Cys Asp Ser Ser
50 55 60

Leu Asp Ile Ala Thr Gln Leu Leu Leu Ser Asn Val Lys Lys Leu Thr
65 70 75 80

Leu Ser Glu Ser Glu Lys Asn Ser Leu Lys Asn Lys Trp Lys Ser Ile
85 90 95

Thr Gly Lys Lys Ser Glu Asn Ala Glu Ile Arg Lys Val Glu Leu Val
100 105 110

Pro Lys Asp Phe Pro Lys Asp Leu Val Leu Ala Pro Leu Pro Asp His
115 120 125

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 19 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Val Asn Asp Phe Thr Trp Tyr Lys Asn Arg Lys Lys Ser Leu Gly Ile
130 135 140

Lys Pro Val Asn Lys Asn Ile Gly Leu Ser Ile Ile Ile Pro Thr Phe
145 150 155 160

Asn Arg Ser Arg Ile Leu Asp Ile Thr Leu Ala Cys Leu Val Asn Gln
165 170 175

Lys Thr Asn Tyr Pro Phe Glu Val Val Val Ala Asp Asp Gly Ser Lys
180 185 190

Glu Asn Leu Leu Thr Ile Val Gln Lys Tyr Glu Gln Lys Leu Asp Ile
195 200 205

Lys Tyr Val Arg Gln Lys Asp Asn Gly Phe Gln Ala Ser Ala Ala Arg
210 215 220

Asn Met Gly Leu Arg Leu Ala Lys Tyr Asp Phe Ile Gly Leu Leu Asp
225 230 235 240

Cys Asp Met Ala Pro Asn Pro Leu Trp Val His Ser Tyr Val Ala Glu
245 250 255

Leu Leu Glu Asp Asp Asp Leu Thr Ile Ile Gly Pro Arg Lys Tyr Ile
260 265 270

Asp Thr Gln His Ile Asp Pro Lys Asp Phe Leu Asn Asn Ala Ser Leu
275 280 285

Leu Glu Ser Leu Pro Glu Val Lys Thr Asn Asn Ser Val Ala Ala Lys
290 295 300

Gly Glu Gly Thr Val Ser Leu Asp Trp Arg Leu Glu Gln Phe Glu Lys
305 310 315 320

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 20 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Thr Glu Asn Leu Arg Leu Ser Asp Ser Pro Phe Arg Phe Phe Ala Ala
325 330 335

Gly Asn Val Ala Phe Ala Lys Lys Trp Leu Asn Lys Ser Gly Phe Phe
340 345 350

Asp Glu Glu Phe Asn His Trp Gly Gly Glu Asp Val Gly Phe Gly Tyr
355 360 365

Arg Leu Phe Arg Tyr Gly Ser Phe Phe Lys Thr Ile Asp Gly Ile Met
370 375 380

Ala Tyr His Gln Glu Pro Pro Gly Lys Glu Asn Glu Thr Asp Arg Glu
385 390 395 400

Ala Gly Lys Asn Ile Thr Leu Asp Ile Met Arg Glu Lys Val Pro Tyr
405 410 415

Ile Tyr Arg Lys Leu Leu Pro Ile Glu Asp Ser His Ile Asn Arg Val
420 425 430

Pro Leu Val Ser Ile Tyr Ile Pro Ala Tyr Asn Cys Ala Asn Tyr Ile
435 440 445

Gln Arg Cys Val Asp Ser Ala Leu Asn Gln Thr Val Val Asp Leu Glu
450 455 460

Val Cys Ile Cys Asn Asp Gly Ser Thr Asp Asn Thr Leu Glu Val Ile
465 470 475 480

Asn Lys Leu Tyr Gly Asn Asn Pro Arg Val Arg Ile Met Ser Lys Pro
485 490 495

Asn Gly Gly Ile Ala Ser Ala Ser Asn Ala Ala Val Ser Phe Ala Lys
500 505 510

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 21 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Gly Tyr Tyr Ile Gly Gln Leu Asp Ser Asp Asp Tyr Leu Glu Pro Asp
515 520 525

Ala Val Glu Leu Cys Leu Lys Glu Phe Leu Lys Asp Lys Thr Leu Ala
530 535 540

Cys Val Tyr Thr Thr Asn Arg Asn Val Asn Pro Asp Gly Ser Leu Ile
545 550 555 560

Ala Asn Gly Tyr Asn Trp Pro Glu Phe Ser Arg Glu Lys Leu Thr Thr
565 570 575

Ala Met Ile Ala His His Phe Arg Met Phe Thr Ile Arg Ala Trp His
580 585 590

Leu Thr Asp Gly Phe Asn Glu Lys Ile Glu Asn Ala Val Asp Tyr Asp
595 600 605

Met Phe Leu Lys Leu Ser Glu Val Gly Lys Phe Lys His Leu Asn Lys
610 615 620

Ile Cys Tyr Asn Arg Val Leu His Gly Asp Asn Thr Ser Ile Lys Lys
625 630 635 640

Leu Gly Ile Gln Lys Lys Asn His Phe Val Val Val Asn Gln Ser Leu
645 650 655

Asn Arg Gln Gly Ile Thr Tyr Tyr Asn Tyr Asp Glu Phe Asp Asp Leu
660 665 670

Asp Glu Ser Arg Lys Tyr Ile Phe Asn Lys Thr Ala Glu Tyr Gln Glu
675 680 685

Glu Ile Asp Ile Leu Lys Asp Ile
690 695

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 22 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<210> 78
<211> 40
<212> PRT
<213> *Pasteurella multocida*

<400> 78

Asn Lys Leu Asp Ile Arg Tyr Val Arg Gln Lys Asp Asn Gly Phe Gln
1 5 10 15

Ala Ser Ala Ala Arg Asn Met Gly Leu Arg Leu Ala Lys Tyr Asp Phe
20 25 30

Ile Gly Leu Leu Asp Cys Asp Met
35 40

<210> 79
<211> 40
<212> PRT
<213> *Pasteurella multocida*

<400> 79

Gln Lys Leu Asp Ile Lys Tyr Val Arg Gln Lys Asp Tyr Gly Tyr Gln
1 5 10 15

Leu Cys Ala Val Arg Asn Leu Gly Leu Arg Thr Ala Lys Tyr Asp Phe
20 25 30

Val Ser Ile Leu Asp Cys Asp Met
35 40

<210> 80
<211> 40
<212> PRT
<213> *Meleagris gallopavo*

<400> 80

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 23 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Glu Lys Leu Asp Ile Lys Tyr Val Arg Gln Lys Asp Tyr Gly Tyr Gln
1 5 10 15

Leu Cys Ala Val Arg Asn Leu Gly Leu Arg Thr Ala Lys Tyr Asp Phe
20 25 30

Val Ser Ile Leu Asp Cys Asp Met
35 40

<210> 81
<211> 36
<212> PRT
<213> Goose

<400> 81

Val Asp Ile Lys Tyr Val Arg Gln Lys Asp Tyr Gly Tyr Gln Leu Cys
1 5 10 15

Ala Val Arg Asn Leu Gly Leu Arg Thr Ala Lys Tyr Asp Phe Val Ser
20 25 30

Ile Leu Asp Cys
35

<210> 82
<211> 33
<212> PRT
<213> sea lion

<400> 82

Lys Tyr Val Arg Gln Lys Asp Tyr Gly Tyr Gln Leu Cys Ala Val Arg
1 5 10 15

Asn Leu Gly Leu Arg Thr Ala Lys Tyr Asp Phe Val Ser Ile Leu Asp
20 25 30

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 24 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

cys

<210> 83
<211> 35
<212> PRT
<213> Artificial sequence

<220>
<223> Consensus of SEQ ID NOS:78-82

<220>
<221> misc_feature
<222> (12)..(12)
<223> Xaa can be any naturally occurring amino acid

<220>
<221> misc_feature
<222> (20)..(20)
<223> Xaa can be any naturally occurring amino acid

<220>
<221> misc_feature
<222> (30)..(30)
<223> Xaa can be any naturally occurring amino acid

<400> 83

Asp Ile Lys Tyr Val Arg Gln Lys Asp Tyr Gly Xaa Gln Leu Cys Ala
1 5 10 15

Val Arg Asn Xaa Gly Leu Arg Thr Ala Lys Tyr Asp Phe Xaa Ser Ile
20 25 30

Leu Asp Cys
35

<210> 84
<211> 703
<212> PRT
<213> Pasteurella multocida

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 25 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

<400> 84

Met Asn Thr Leu Ser Gln Ala Ile Lys Ala Tyr Asn Ser Asn Asp Tyr
1 5 10 15

Gln Leu Ala Leu Lys Leu Phe Glu Lys Ser Ala Glu Ile Tyr Gly Arg
20 25 30

Lys Ile Val Glu Phe Gln Ile Thr Lys Cys Lys Glu Lys Leu Ser Ala
35 40 45

His Pro Ser Val Asn Ser Ala His Leu Ser Val Asn Lys Glu Glu Lys
50 55 60

Val Asn Val Cys Asp Ser Pro Leu Asp Ile Ala Thr Gln Leu Leu Leu
65 70 75 80

Ser Asn Val Lys Lys Leu Val Leu Ser Asp Ser Glu Lys Asn Thr Leu
85 90 95

Lys Asn Lys Trp Lys Leu Leu Thr Glu Lys Lys Ser Glu Asn Ala Glu
100 105 110

Val Arg Ala Val Ala Leu Val Pro Lys Asp Phe Pro Lys Asp Leu Val
115 120 125

Leu Ala Pro Leu Pro Asp His Val Asn Asp Phe Thr Trp Tyr Lys Lys
130 135 140

Arg Lys Lys Arg Leu Gly Ile Lys Pro Glu His Gln His Val Gly Leu
145 150 155 160

Ser Ile Ile Val Thr Thr Phe Asn Arg Pro Ala Ile Leu Ser Ile Thr
165 170 175

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 26 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Leu Ala Cys Leu Val Asn Gln Lys Thr His Tyr Pro Phe Glu Val Ile
180 185 190

Val Thr Asp Asp Gly Ser Gln Glu Asp Leu Ser Pro Ile Ile Arg Gln
195 200 205

Tyr Glu Asn Lys Leu Asp Ile Arg Tyr Val Arg Gln Lys Asp Tyr Gly
210 215 220

Tyr Gln Leu Cys Ala Val Arg Asn Leu Gly Leu Arg Thr Ala Lys Tyr
225 230 235 240

Asp Phe Val Ser Ile Leu Asp Cys Asp Met Ala Pro Gln Gln Leu Trp
245 250 255

Val His Ser Tyr Leu Thr Glu Leu Leu Glu Asp Asp Asp Leu Thr Ile
260 265 270

Ile Gly Pro Arg Lys Tyr Ile Asp Thr Gln His Ile Asp Pro Lys Asp
275 280 285

Phe Leu Asn Asn Ala Ser Leu Leu Glu Ser Leu Pro Glu Val Lys Thr
290 295 300

Asn Asn Ser Val Ala Ala Lys Gly Glu Gly Thr Val Ser Leu Asp Trp
305 310 315 320

Arg Leu Glu Gln Phe Glu Lys Thr Glu Asn Leu Arg Leu Ser Asp Ser
325 330 335

Pro Phe Arg Phe Phe Ala Ala Gly Asn Val Ala Phe Ala Lys Lys Trp
340 345 350

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 27 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Leu Asn Lys Ser Gly Phe Phe Asp Glu Glu Phe Asn His Trp Gly Gly
355 360 365

Glu Asp Val Glu Phe Gly Tyr Arg Leu Phe Arg Tyr Gly Ser Phe Phe
370 375 380

Lys Thr Ile Asp Gly Ile Met Ala Tyr His Gln Glu Pro Pro Gly Lys
385 390 395 400

Glu Asn Glu Thr Asp Arg Glu Ala Gly Lys Asn Ile Thr Leu Asp Ile
405 410 415

Met Arg Glu Lys Val Pro Tyr Ile Tyr Arg Lys Leu Leu Pro Ile Glu
420 425 430

Asp Ser His Ile Asn Arg Val Pro Leu Val Ser Ile Tyr Ile Pro Ala
435 440 445

Tyr Asn Cys Ala Asn Tyr Ile Gln Arg Cys Val Asp Ser Ala Leu Asn
450 455 460

Gln Thr Val Val Asp Leu Glu Val Cys Ile Cys Asn Asp Gly Ser Thr
465 470 475 480

Asp Asn Thr Leu Glu Val Ile Asn Lys Leu Tyr Gly Asn Asn Pro Arg
485 490 495

Val Arg Ile Met Ser Lys Pro Asn Gly Gly Ile Ala Ser Ala Ser Asn
500 505 510

Ala Ala Val Ser Phe Ala Lys Gly Tyr Tyr Ile Gly Gln Leu Asp Ser
515 520 525

Asp Asp Tyr Leu Glu Pro Asp Ala Val Glu Leu Cys Leu Lys Glu Phe
530 535 540

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 28 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Leu Lys Asp Lys Thr Leu Ala Cys Val Tyr Thr Thr Asn Arg Asn Val
545 550 555 560

Asn Pro Asp Gly Ser Leu Ile Ala Asn Gly Tyr Asn Trp Pro Glu Phe
565 570 575

Ser Arg Glu Lys Leu Thr Thr Ala Met Ile Ala His His Phe Arg Met
580 585 590

Phe Thr Ile Arg Ala Trp His Leu Thr Asp Gly Phe Asn Glu Lys Ile
595 600 605

Glu Asn Ala Val Asp Tyr Asp Met Phe Leu Lys Leu Ser Glu Val Gly
610 615 620

Lys Phe Lys His Leu Asn Lys Ile Cys Tyr Asn Arg Val Leu His Gly
625 630 635 640

Asp Asn Thr Ser Ile Lys Lys Leu Gly Ile Gln Lys Lys Asn His Phe
645 650 655

Val Val Val Asn Gln Ser Leu Asn Arg Gln Gly Ile Thr Tyr Tyr Asn
660 665 670

Tyr Asp Glu Phe Asp Asp Leu Asp Glu Ser Arg Lys Tyr Ile Phe Asn
675 680 685

Lys Thr Ala Glu Tyr Gln Glu Glu Ile Asp Ile Leu Lys Asp Ile
690 695 700

<210> 85
<211> 705
<212> PRT
<213> Pasteurella multocida
<400> 85

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 29 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Met Asn Thr Leu Ser Gln Ala Ile Lys Ala Tyr Asn Ser Asn Asp Tyr
1 5 10 15
Glu Leu Ala Leu Lys Leu Phe Glu Lys Ser Ala Glu Thr Tyr Gly Arg
20 25 30
Lys Ile Val Glu Phe Gln Ile Ile Lys Cys Lys Glu Lys Leu Ser Thr
35 40 45
Asn Ser Tyr Val Ser Glu Asp Lys Lys Asn Ser Val Cys Asp Ser Ser
50 55 60
Leu Asp Ile Ala Thr Gln Leu Leu Leu Ser Asn Val Lys Lys Leu Thr
65 70 75 80
Leu Ser Glu Ser Glu Lys Asn Ser Leu Lys Asn Lys Trp Lys Ser Ile
85 90 95
Thr Gly Lys Lys Ser Glu Asn Ala Glu Ile Arg Lys Val Glu Leu Val
100 105 110
Pro Lys Asp Phe Pro Lys Asp Leu Val Leu Ala Pro Leu Pro Asp His
115 120 125
Val Asn Asp Phe Thr Trp Tyr Lys Asn Arg Lys Lys Ser Leu Gly Ile
130 135 140
Lys Pro Val Asn Lys Asn Ile Gly Leu Ser Ile Ile Ile Pro Thr Phe
145 150 155 160
Asn Arg Ser Arg Ile Leu Asp Ile Thr Leu Ala Cys Leu Val Asn Gln
165 170 175
Lys Thr Asn Tyr Pro Phe Glu Val Val Val Ala Asp Asp Gly Ser Lys
180 185 190

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 30 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Glu Asn Leu Leu Thr Ile Val Gln Lys Tyr Glu Gln Lys Leu Asp Ile
195 200 205
Lys Tyr Val Arg Gln Lys Asp Asn Gly Phe Gln Ala Ser Ala Ala Arg
210 215 220
Asn Met Gly Leu Arg Leu Ala Lys Tyr Asp Phe Ile Gly Leu Leu Asp
225 230 235 240
Cys Asp Met Ala Pro Asn Pro Leu Trp Val His Ser Tyr Val Ala Glu
245 250 255
Leu Leu Leu Glu Asp Asn Asp Ile Val Leu Ile Gly Pro Arg Lys Tyr
260 265 270
Val Asp Thr His Asn Ile Thr Ala Glu Gln Phe Leu Asn Asp Pro Tyr
275 280 285
Leu Ile Glu Ser Leu Pro Glu Thr Ala Thr Asn Asn Asn Pro Ser Ile
290 295 300
Thr Ser Lys Gly Asn Ile Ser Leu Asp Trp Arg Leu Glu His Phe Lys
305 310 315 320
Lys Thr Asp Asn Leu Arg Leu Cys Asp Ser Pro Phe Arg Tyr Phe Ser
325 330 335
Cys Gly Asn Val Ala Phe Ser Lys Glu Trp Leu Asn Lys Val Gly Trp
340 345 350
Phe Asp Glu Glu Phe Asn His Trp Gly Gly Glu Asp Val Glu Phe Gly
355 360 365
Tyr Arg Leu Phe Ala Lys Gly Cys Phe Phe Arg Val Ile Asp Gly Gly
370 375 380

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 31 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Met Ala Tyr His Gln Glu Pro Pro Gly Lys Glu Asn Glu Thr Asp Arg
385 390 395 400

Glu Ala Gly Lys Ser Ile Thr Leu Lys Ile Val Lys Glu Lys Val Pro
405 410 415

Tyr Ile Tyr Arg Lys Leu Leu Pro Ile Glu Asp Ser His Ile His Arg
420 425 430

Ile Pro Leu Val Ser Ile Tyr Ile Pro Ala Tyr Asn Cys Ala Asn Tyr
435 440 445

Ile Gln Arg Cys Val Asp Ser Ala Leu Asn Gln Thr Val Val Asp Leu
450 455 460

Glu Val Cys Ile Cys Asn Asp Gly Ser Thr Asp Asn Thr Leu Glu Val
465 470 475 480

Ile Asn Lys Leu Tyr Gly Asn Asn Pro Arg Val Arg Ile Met Ser Lys
485 490 495

Pro Asn Gly Gly Ile Ala Ser Ala Ser Asn Ala Ala Val Ser Phe Ala
500 505 510

Lys Gly Tyr Tyr Ile Gly Gln Leu Asp Ser Asp Asp Tyr Leu Glu Pro
515 520 525

Asp Ala Val Glu Leu Cys Leu Lys Glu Phe Leu Lys Asp Lys Thr Leu
530 535 540

Ala Cys Val Tyr Thr Thr Asn Arg Asn Val Asn Pro Asp Gly Ser Leu
545 550 555 560

Ile Ala Asn Gly Tyr Asn Trp Pro Glu Phe Ser Arg Glu Lys Leu Thr
565 570 575

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

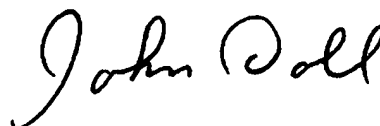
PATENT NO. : 7,223,571 B2
APPLICATION NO. : 10/642248
DATED : May 29, 2007
INVENTOR(S) : Paul DeAngelis and Wei Jing

Page 32 of 32

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Thr Ala Met Ile Ala His His Phe Arg Met Phe Thr Ile Arg Ala Trp
580 585 590
His Leu Thr Asp Gly Phe Asn Glu Asn Ile Glu Asn Ala Val Asp Tyr
595 600 605
Asp Met Phe Leu Lys Leu Ser Glu Val Gly Lys Phe Lys His Leu Asn
610 615 620
Lys Ile Cys Tyr Asn Arg Val Leu His Gly Asp Asn Thr Ser Ile Lys
625 630 635 640
Lys Leu Gly Ile Gln Lys Lys Asn His Phe Val Val Val Asn Gln Ser
645 650 655
Leu Asn Arg Gln Gly Ile Asn Tyr Tyr Asn Tyr Asp Lys Phe Asp Asp
660 665 670
Leu Asp Glu Ser Arg Lys Tyr Ile Phe Asn Lys Thr Ala Glu Tyr Gln
675 680 685
Glu Glu Met Asp Ile Leu Lys Asp Leu Lys Leu Ile Gln Asn Lys Asp
690 695 700
Ala
705

Signed and Sealed this
Sixteenth Day of June, 2009



JOHN DOLL
Acting Director of the United States Patent and Trademark Office